

**Final
Site-Specific Field Sampling Plan and
Site-Specific Safety and Health Plan Attachments
11th Chemical Motor Pool Areas: Building 3299, Parcel 29(7),
Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7)
Old Hospital, Parcel 95(7)
Former Motor Pool Area 2000, Parcel 144(7) and
Former Gas Station Area, Parcel 137(7)**

**Fort McClellan
Calhoun County, Alabama**

**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

September 1998

Revision 1

Site-Specific Field Sampling Plans

11th Chemical Motor Pool Areas: Building 3299, Parcel 29(7), Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7)

Old Hospital, Parcel 95(7)

Former Motor Pool Area 2000, Parcel 144(7) and Former Gas Station Area, Parcel 137(7)

**Final
Site-Specific Field Sampling Plan Attachment
Site Investigation at the 11th Chemical Motor Pool Areas:
Building 3299, Parcel 29(7), Building 3298, Parcel 30(7),
and Building 3262, Parcel 74(7)**

**Fort McClellan
Calhoun County, Alabama**

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**Delivery Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645**

September 1998

Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
BCT	base closure team
bls	below land surface
Braun	Braun Intertec Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
COPC	chemical(s) of potential concern
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
E&E	Ecology & Environment, Inc.
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
MCL	maximum contaminant level
µg/L	micrograms per liter
mg/kg	milligrams per kilogram
PAH	polyaromatic hydrocarbon
PID	photoionization detector
ppm	parts per million
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
RCRA	Resource Conservation and Recovery Act
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHHP	site-specific safety and health plan

List of Acronyms *(Continued)*

SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
WMP	waste management plan
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation (SI) at Fort McClellan (FTMC), Calhoun County, Alabama, at the 11th Chemical Motor Pool Area to determine the presence or absence of potential site-specific chemicals at this site. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the 11th Chemical Motor Pool Area site.

The 11th Chemical Motor Pool Area located in the central part of the Main Post at the intersection of 14th Avenue and 20th Street. The area consists of three parcels; Building 3299, Parcel 29(7), Building 3298 Parcel 30(7), and Building 3262 Parcel 74(7). The study area covers approximately 6.28 acres. The site is predominately a fuel storage area comprised of existing and removed underground storage tanks, an oil/water separator, a washrack, and vehicle storage areas.

IT will collect soil, groundwater, surface water, and sediment samples for a range of parameters analyzed to meet the objectives of the SI. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) (IT, 1998b), and regulatory agency guidelines.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the 11th Chemical Motor Pool Area site will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the 11th Chemical Motor Pool Area, Parcels 29(7), 30(7), and 74(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for FTMC has been prepared to provide technical guidance and rationale for sample collection and analysis at the 11th Chemical Motor Pool Area, Building 3299, Parcel 29(7), Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7) (Figure 1-1). IT will collect samples at this site as part of a SI effort. The results of this effort will determine whether there are contaminants at this site in concentrations high enough to warrant further remedial investigation and/or action. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the 11th Chemical Motor Pool Area, and the installation-wide work plan (WP) (IT, 1998b), and the SAP. The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP).

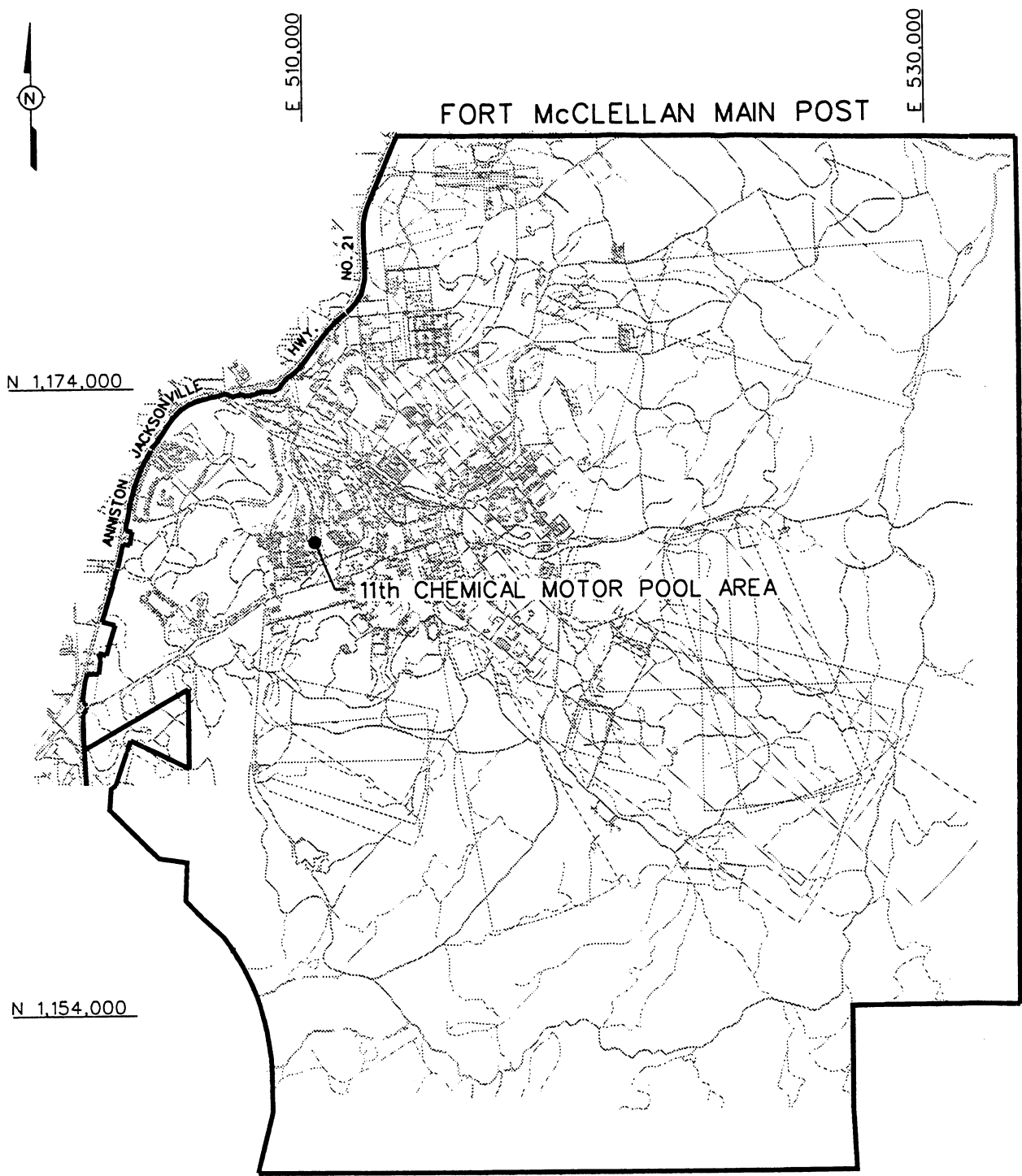
1.2 Site Description

FTMC is a U.S. Army installation located in Calhoun County, Alabama, that occupies approximately 45,679 acres. The main post installation is bounded on the south and west by the city of Anniston, and on the northwest by the City of Weaver. Pelham Range is 5 miles due west of the Main Post installation and adjoins Anniston Army Depot along its northern boundary. Adjoining the Main Post installation to the east is the Choccolocco Corridor, which provides an access corridor connecting the installation to the Talladega National Forest.

The 11th Chemical Motor Pool Area is located in the central part of Main Post at the intersection of 14th Avenue and 20th Street (Figure 1-2). The study area covers approximately 6.28 acres.

The 11th Chemical Motor Pool Area consists of three sites: Building 3299, Parcel 29(7), Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7). The three sites were identified as Community Environmental Response Facilitation Act (CERFA) sites (see Chapter 2.0), where

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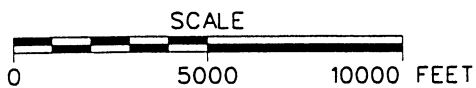
 FORT McCLELLAN BOUNDARY

FIGURE 1-1
SITE LOCATION MAP
11th CHEMICAL MOTOR POOL AREA
PARCELS 29(7), 30(7) & 74(7)

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MOBILE DISTRICT
FORT McCLELLAN
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petroleum products were stored, released, and/or disposed, and/or migration of hazardous substances is suspected, but the sites are either not evaluated or require additional evaluation to determine the environmental condition of the sites.

The area around the site consists of housing, recreational, training, and administrative buildings. Remount Creek is located approximately 90 feet east of the site and flows south to north across the eastern border of the site. One small tributary approximately 800 feet west of the site drains into Remount Creek to the north. The site is located on a nearly flat broad crest, approximately 750 to 760 feet mean sea level, which slopes gently to the east/northeast. This site is approximately 220 feet wide (east to west) by 1,140 feet long (north to south) and is bounded on all sides by a chainlink fence. Shallow groundwater at the site is probably controlled by surface drainage and/or topography.

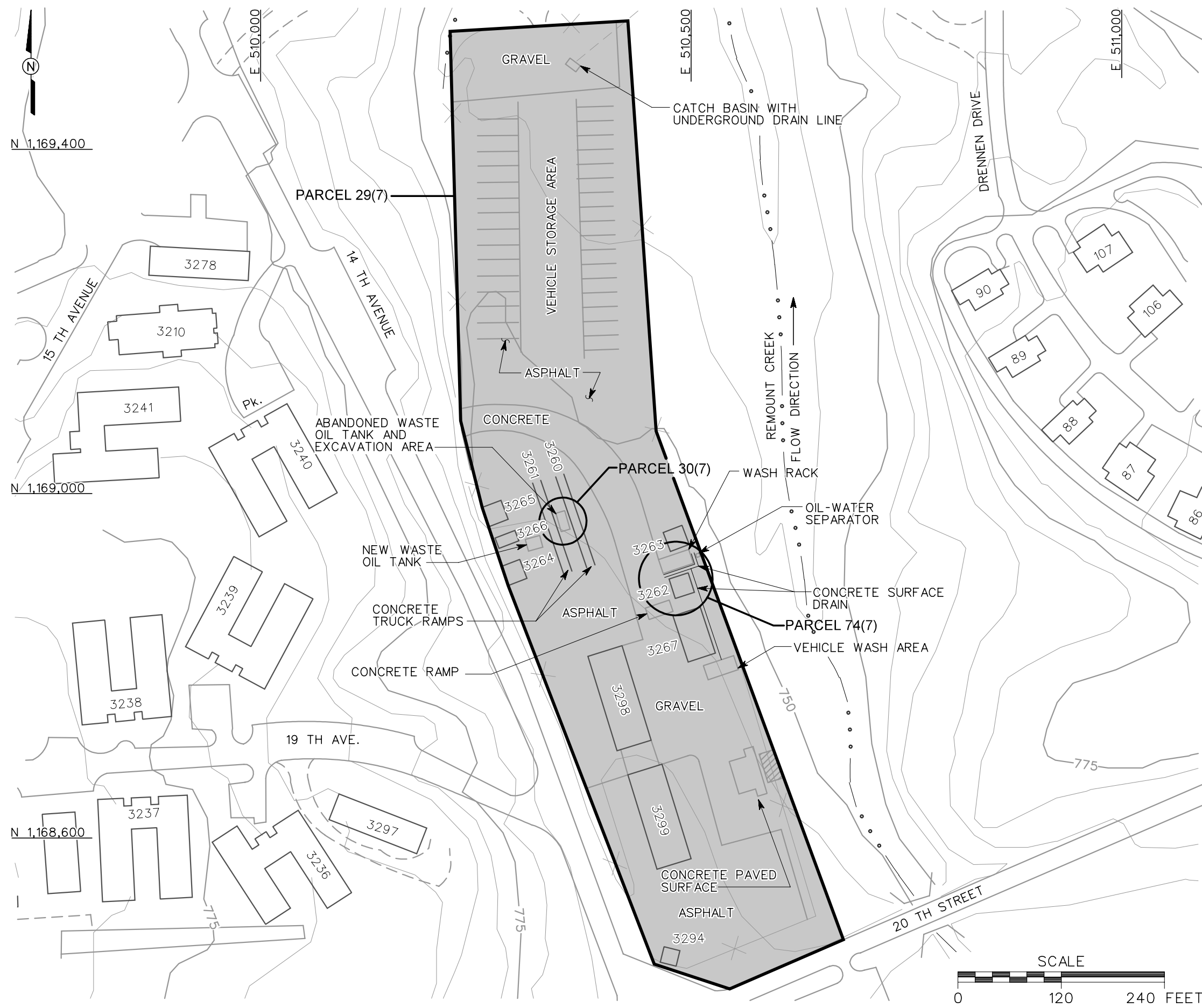
The soil type at the 11th Chemical Motor Pool Area is classified as Montevallo. Montevallo soil type is generally characterized by severely eroded, shaley silty clay soils developed from interbedded shale and fine-grained sandstone. These soils are formed either by erosional forces, surface runoff or natural reworking processes. Colors are typically yellowish-brown. The high erosion hazard, low capacity for available moisture, and thin root zone make this soil unsuited for cultivation. Depth to groundwater is typically 20 feet or greater. Depth to bedrock is approximately 1.5 feet or greater (U.S. Department of Agriculture, 1961). However, the actual groundwater depths at the site are 4 to 6 feet below land surface (bls).

1.3 Scope of Work

The scope of work for activities associated with the SI at the 11th Chemical Motor Pool Area, as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect four surface soil, ten subsurface soil, three sediments, three surface water, two depositional soils, and fifteen groundwater samples to determine whether potential site-specific chemicals (PSSC) are present at the 11th Chemical Motor Pool Area and provide data to determine future planned corrective measures and closure activities.

At completion of the field activities and sample analyses, draft and final SI summary reports will be prepared to evaluate the absence or presence of PSSCs at this site, and to recommend further actions, if appropriate.



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UNIMPROVED ROADS AND PARKING

PAVED ROADS AND PARKING

BUILDING

TOPOGRAPHIC CONTOURS

PARCEL BOUNDARY

BRIDGE

CULVERT WITH HEADWALL

SURFACE DRAINAGE / CREEK

FENCE

RAILROAD

EXCAVATED UST AREA

NOTE

1. ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

FIGURE 1-2

SITE MAP

11th CHEMICAL MOTOR POOL AREA

PARCELS 29(7), 30(7) & 74(7)

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Contract No. DACA21-96-D-0018

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2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

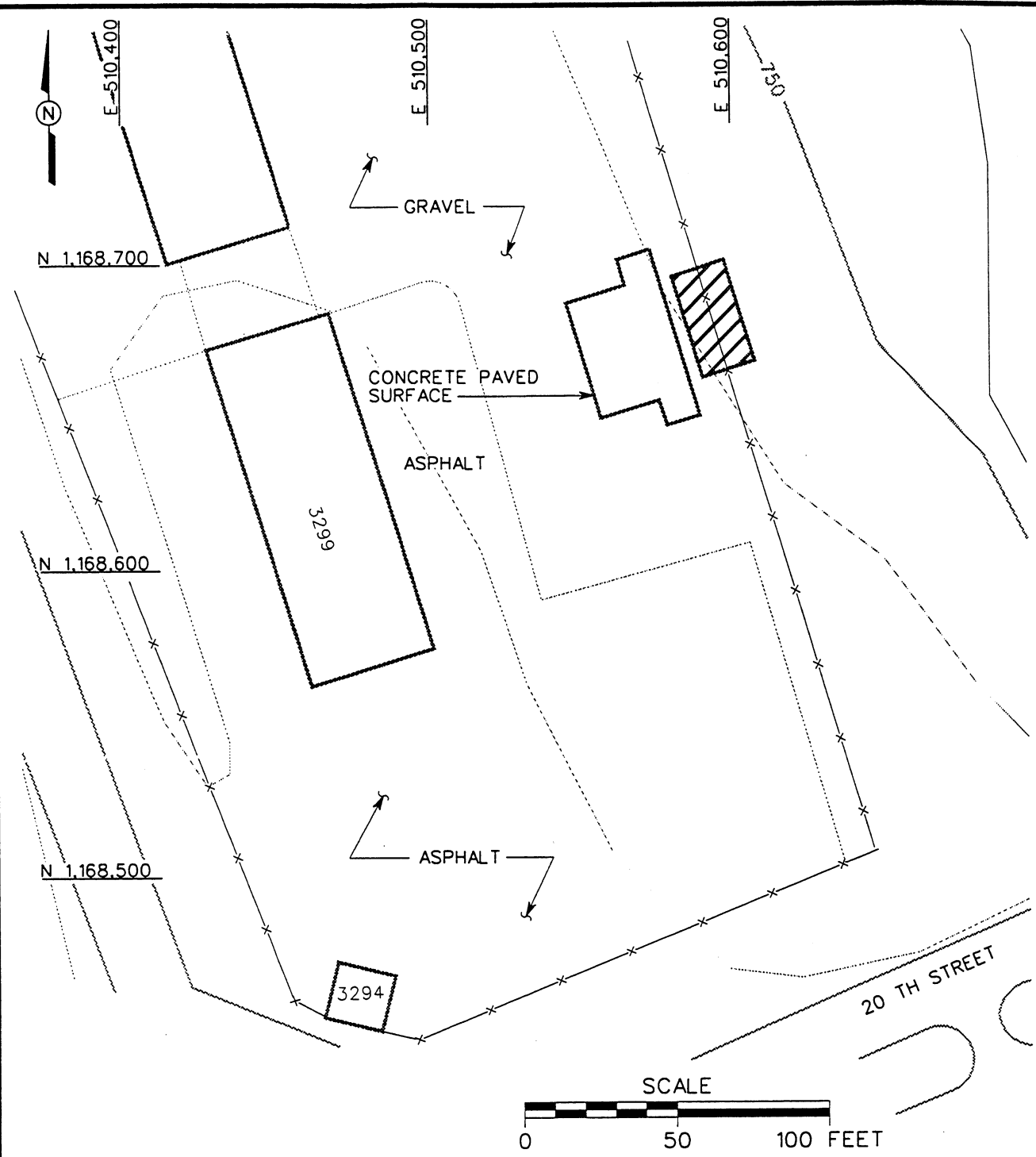
The EBS was conducted in accordance with the CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated substances, petroleum products, and Resource Conservation and Recovery Act (RCRA)-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The 11th Chemical Motor Pool Area was identified as a site where further evaluation was needed.

Building 3299. Building 3299, (Parcel 29[7]) is located in the central part of the Main Post. In 1953, a steel 10,000-gallon underground storage tank (UST) was installed at the site to store diesel fuel. The 10,000-gallon UST was located approximately 120 feet east of Building 3299 next to a chain fence (Figure 2-1). In 1986, the tank was removed and replaced with a new 10,000-gallon fiberglass UST. In November 1989, tank tightness tests revealed the UST was leaking. The tank was emptied and removed from service (Ecology & Environment, Inc. [E&E], 1991). Analysis of soil samples collected from borings in January 1990 by Aroclor Services, Inc. detected total recoverable petroleum hydrocarbon (TRPH) concentrations ranging from 80 to

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- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- FENCE
- EXCAVATED UST AREA

NOTE

- ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

FIGURE 2-1
SITE MAP
BUILDING 3299
11th CHEMICAL MOTOR POOL AREA
PARCELS 29(7), 30(7) & 74(7)

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2,000 milligrams per kilogram (mg/kg) (E&E, 1991). Analytical results of the soil samples collected by Aroclor Services were not available. The UST was removed and surrounding soils excavated in 1990. At this time, four monitoring wells (MW5-1, MW5-2, MW5-3, and MW5-4) were installed by the USACE to determine if any contamination associated with the tank was present (ESE, 1998). Soil samples were collected during the advancement and installation of the four monitoring wells and analyzed for TRPH. TRPH concentrations detected in soil samples ranged from 5.3 to 2,718 mg/kg. Subsurface soil samples collected from the soil borings at monitoring wells MW5-3 and MW5-4 exhibited TRPH concentrations exceeding 100 mg/kg. The greatest concentration of TRPH in soil was detected in monitoring well MW5-4 from 5 to 6.5 feet below land surface (bls) at a concentration of 2,718 mg/kg. Soil sample analytical results are presented in Table 2-1.

The soil samples collected from monitoring wells MW5-3 and MW5-4 were within 5 feet of the groundwater table. ADEM's *Corrective Action Limits for Petroleum Contaminated Soil* (Rule 335-6-15) specifies that soils exhibiting concentrations greater than 100 mg/kg within 5 feet of the groundwater table may require an additional investigation and/or corrective measures. Therefore, a preliminary investigation was initiated in 1990 by E&E.

During the preliminary investigation, groundwater samples were collected from the four monitoring wells (MW5-1, MW5-2, MW5-3, and MW5-4) and analyzed for volatile organic compounds (VOC), polyaromatic hydrocarbons (PAH), and lead. The groundwater samples collected from monitoring well MW5-4 showed benzene at a concentration of 8.3 micrograms per liter ($\mu\text{g/L}$), which slightly exceeded the 5 $\mu\text{g/L}$ ADEM and EPA maximum contaminant levels (MCL). Benzene was detected at a concentration of 2.8 $\mu\text{g/L}$ in the groundwater sample collected from monitoring well MW5-3. Lead was detected in groundwater samples collected from monitoring wells MW5-3 and MW5-4 at concentrations of 8.1 and 9.3 $\mu\text{g/L}$, respectively. PAHs were not detected in any of the groundwater samples collected.

Preliminary investigation findings led to the recommendation for a secondary investigation. The secondary investigation was performed by E&E to determine the lateral and vertical extent of soil and/or groundwater contamination as outlined in ADEM Rule 335-6-15. During the investigation, three soil borings (B5-7, B5-10, and B5-11), and two additional monitoring wells (MW5-5 and MW5-6) were installed in January 1992. Soil samples were collected during the advancement of the soil borings and installation of the two monitoring wells and analyzed for TRPH. TRPH concentrations detected in soil samples ranged from 34 to 47 mg/kg. TRPH was not detected in the soil samples collected during the installation of monitoring wells MW5-5 and

Table 2-1

**Summary of Soil Sample Analytical Results
1990
11th Chemical Motor Pool Area, Building 3299, Parcel 29(7)
Fort McClellan, Calhoun County, Alabama**

Monitoring Well Number ^a	Depth Interval (feet bls)	TRPH Concentration (mg/kg)
MW5-1	5.0-6.5	88
MW5-1	10.0-11.5	57
MW5-2	5.0-6.5	73
MW5-2	10.0-11.5	78
MW5-3	5.0 - 6.5	132
MW5-3	10.0 - 11.5	112
MW5-4	5.0 - 6.5	2,718
MW5-4	10.0 - 11.5	128

^aData from soil samples collected by USACE during monitoring well Installation in 1990.

Source: Ecology & Environment, Inc., 1991, *Preliminary Investigation Report for Closure of Underground Storage Tank.*

MW5-6. Soil samples collected from the soil borings at monitoring wells MW5-5 and MW5-6 were analyzed for TRPH. The greatest concentration of TRPH in soil was detected in boring B5-11 from 2 to 3.5 bls at a concentration of 47 mg/kg. Soil sample analytical results are presented in Table 2-2. Groundwater samples were collected from the four monitoring wells installed during the preliminary investigation (MW5-1, MW5-2, MW5-3, MW5-4) and from monitoring wells MW5-5 and MW5-6. Benzene was detected in monitoring wells MW5-3 and MW5-4 at concentrations of 0.89 µg/L and 5.8 µg/L, respectively. Groundwater contamination was not detected in monitoring wells MW5-5 and MW5-6, except lead. Lead was detected in monitoring well MW5-6 at a concentration of 16 µg/L. The results of the primary and secondary field investigations indicate contaminant concentrations in groundwater and soil had decreased with time. Groundwater analytical data collected and analyzed during the preliminary and secondary investigations are shown on Figure 2-2 and presented in Table 2-3.

On January 16, 1992, E&E collected two surface water samples (SW-51 and SW-52) from Remount Creek. One surface water sample was collected immediately upstream and one surface water sample was collected downstream of the site. The samples were analyzed for VOCs, PAHs, and lead. None of the parameters analyzed for were detected in either of the two samples. The locations of the two surface water samples are shown on Figure 2-2.

Based on water level elevations measured in January 1992, it appears the depth to water at the Building 3299 site ranges from approximately 4 to 6 feet bls. The apparent groundwater flow direction is northeast towards Remount Creek. Given the close proximity of Remount Creek, there is a potential for groundwater to discharge into the creek (E&E, 1992).

E&E recommended a No Further Action based on continued use as a motor pool. The base closure team (BCT) felt the site required further evaluation before transferring the property. Specifically, the BCT was concerned with the change in land use from a motor pool to residential classification.

Building 3298. A steel 2,000-gallon waste oil UST is located approximately 160 feet north of Building 3298, between two sets of concrete truck ramps (Figure 2-3). In April, 1994, four soil borings (one on each side) were advanced around the waste oil UST by Braun Intertec Corporation (Braun). Soil samples were collected at 7.5 feet bls in each of the four soil borings and analyzed for total petroleum hydrocarbon (TPH) and total lead. One soil sample was collected from the south side of the tank at 5 feet bls. The highest TPH concentrations (775 parts per million [ppm]) were detected from the south soil sample (sample number 3298-5) at a depth

Table 2-2

Summary of Soil Analytical Results

1992

11th Chemical Motor Pool Area, Building 3298, Parcel 29(7)

Fort McClellan, Calhoun County, Alabama

Monitoring Well/Boring	Depth Interval (feet bls)	TRPH Concentration (mg/kg)
MW5-5	3-5	ND
MW5-6	2-4	ND
B5-7	2-4	ND
B5-7	4-6	ND
B5-10	4-6	43
B5-10	6-8	ND
B5-11	0-2	34
B5-11	2-3.5	47

bls - Below land surface.

mg/kg - Milligrams per kilogram.

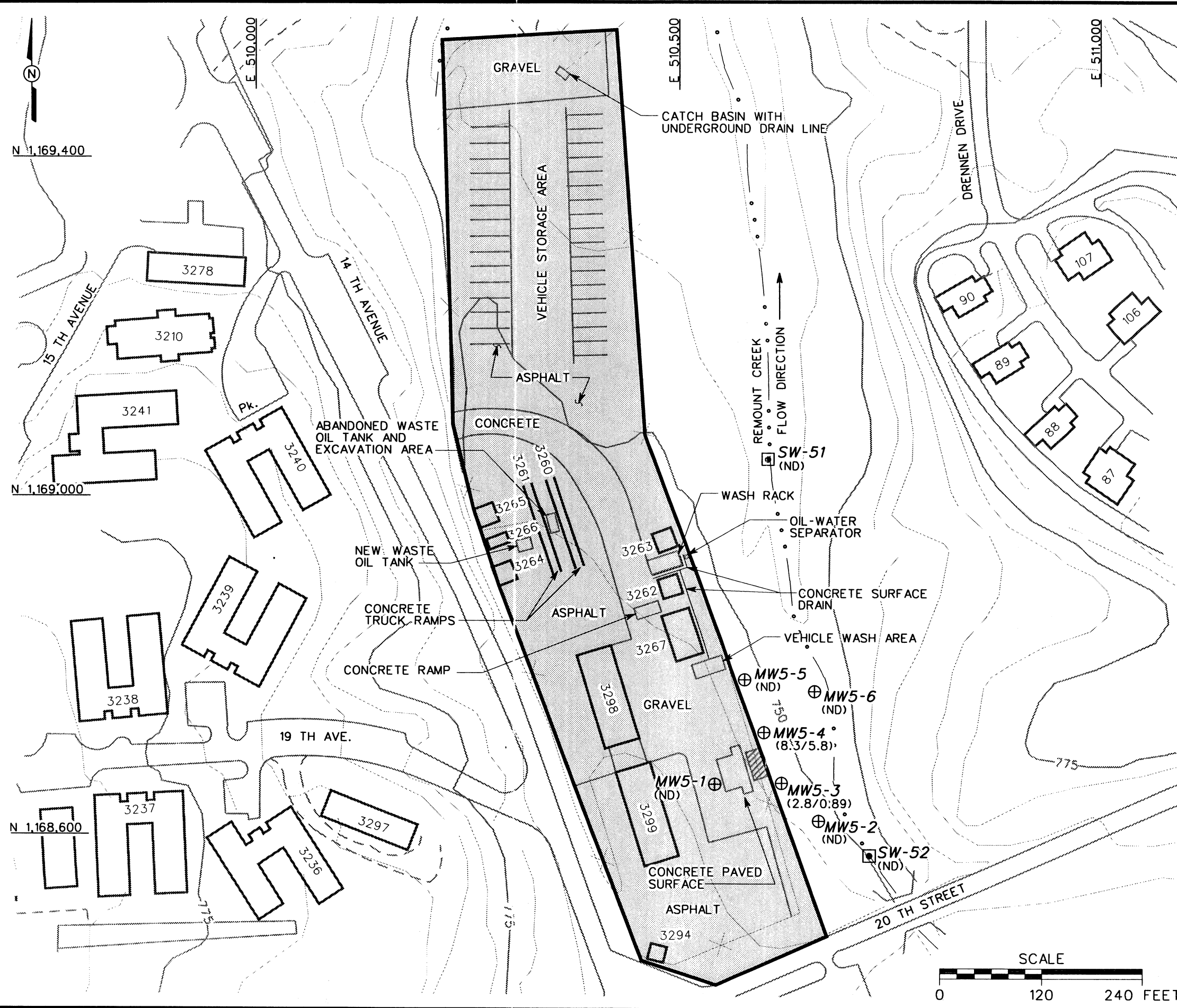
ND - Parameter not detected.

TRPH - Total recoverable petroleum hydrocarbon.

Source: Ecology & Environment, Inc., 1992, *Secondary Investigation Report for Closure of Surplus Underground Storage Tanks, Fort McClellan, Anniston, Alabama*.

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LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE
- RAILROAD
- EXCAVATED UST AREA
- EXISTING RESIDUUM MONITORING WELL
- EXISTING SURFACE WATER SAMPLE
- (ND) NOT DETECTED
- ug/l MICROGRAMS/LITER (PARTS PER BILLION)
- (8.3 ug/l) BENZENE CONCENTRATION IN GROUNDWATER (1990/1992)
- (5.8 ug/l)

NOTE

1. ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

FIGURE 2-2
BENZENE CONCENTRATION IN GROUNDWATER
BUILDING 3299 (1990/1992)
11th CHEMICAL MOTOR POOL AREA
PARCELS 29(7), 30(7) & 74(7)

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Table 2-3

**Summary of Groundwater Analytical Results
Preliminary and Secondary Investigations
1990 and 1992
11th Chemical Motor Pool Area, Building 3299, Parcel 29(7)
Fort McClellan, Calhoun County, Alabama**

Parameter	Monitoring Well Number/Concentration (µg/L)						ADEM/EPA	
							MCLs	MCLs
Benzene	MW5-1 ND / ND	MW5-2 ND / ND	MW5-3 2.8 / 0.89	MW5-4 8.3 / 5.8	MW5-5 NA / ND	MW5-6 NA / ND	5	5
Total Xylene	ND	ND	2 / ND	1.8 / 3.2	NA / ND	NA / ND		10,000
Ethyl Benzene	ND	ND	ND / 1.4	ND	NA / ND	NA / ND		700
Toluene	ND	ND	ND	ND / 0.98	NA / ND	NA / ND		1,000
MTBE	ND	ND	22 / 4.7	46 / 8	NA / ND	NA / ND		
Naphthalene	NA	NA	ND	ND	NA / ND	NA / ND		
1-Methylnaphthalene	NA	NA	ND	ND	NA / ND	NA / ND		
2-Methylnaphthalene	NA	NA	ND	ND	NA / ND	NA / ND		
Acenaphthene	NA	NA	ND	ND	NA / ND	NA / ND		
Fluoranthene	NA	NA	ND	ND	NA / ND	NA / ND		
Anthracene	NA	NA	ND	ND	NA / ND	NA / ND		
Fluorene	NA	NA	ND	ND	NA / ND	NA / ND		
Phenanthrene	NA	NA	ND	ND	NA / ND	NA / ND		
Pyrene	NA	NA	ND	ND	NA / ND	NA / ND		
Lead	NA	NA	8.1 / ND	9.3 / ND	NA / 16	NA / ND	20	15

ND = Parameter not detected.

NA = Parameter not analyzed.

Monitoring wells MW5-5 and MW5-6 installed during secondary investigation.

8.3/5/8 = 1990 Preliminary investigation concentration/1992 secondary investigation concentration.

MCL = Maximum contaminant level (µg/L).

Sources:

E&E, 1991, *Preliminary Investigation Report for Closure of Underground Storage Tanks, Fort McClellan, Anniston, Alabama.*

E&E, 1992, *Secondary Investigation Report for Closure of Surplus Underground Storage Tanks, Fort McClellan, Anniston, Alabama.*

of 5 feet bls. Groundwater sampling was not conducted at this site. Groundwater was not encountered during the UST closure. According to the closure report prepared by Braun, approximately 10 cubic yards of soil were removed from the tank pit. A soil sample was collected from the excavated stockpiled soil and analyzed for TPH and total lead. TPH concentrations of 2,900 ppm were detected in the stockpiled soil. The excavated soil was taken to an off-site landfill for disposal. During excavation activities, silty sand and clay were encountered at approximately 7.5 feet bls. Shale bedrock was encountered from 7.5 feet bls to 15.5 feet bls. The closure report concluded that a release had occurred on site and that the vertical and horizontal extent of contamination in the soil had not been determined (Braun, 1995). On May 5, 1994 the waste oil UST was closed in place and filled with a concrete slurry. The tank was later replaced with a new 2,500-gallon fiberglass waste oil UST. The abandoned 2,000-gallon steel waste oil UST excavation and new 2,500 gallon fiberglass waste oil UST locations are shown on Figure 2-3. Soil analytical data collected during the tank closure are presented in Table 2-4. Soil boring locations with TPH and lead concentrations are shown on Figure 2-4.

Washrack Building 3262. Building 3262 was built in approximately 1953 and originally had a baffle type oil/water separator. The facility was rebuilt in 1991 and now has a settling basin attached to a coalescing plate oil/water separator, which discharges to the sanitary sewer (ESE, 1998). The baffle type oil/water separator still exists at the site. The oil/water separator is located east of the washrack in the grass area inside the fence. The oil/water separator and wash rack are connected to a vehicle wash area by a concrete surface drain (Figure 2-3).

Table 2-4

**Summary of Soil Analytical Results
April 1994
11th Chemical Motor Pool Area, Building 3298, Parcel 30(7)
Fort McClellan, Calhoun County, Alabama**

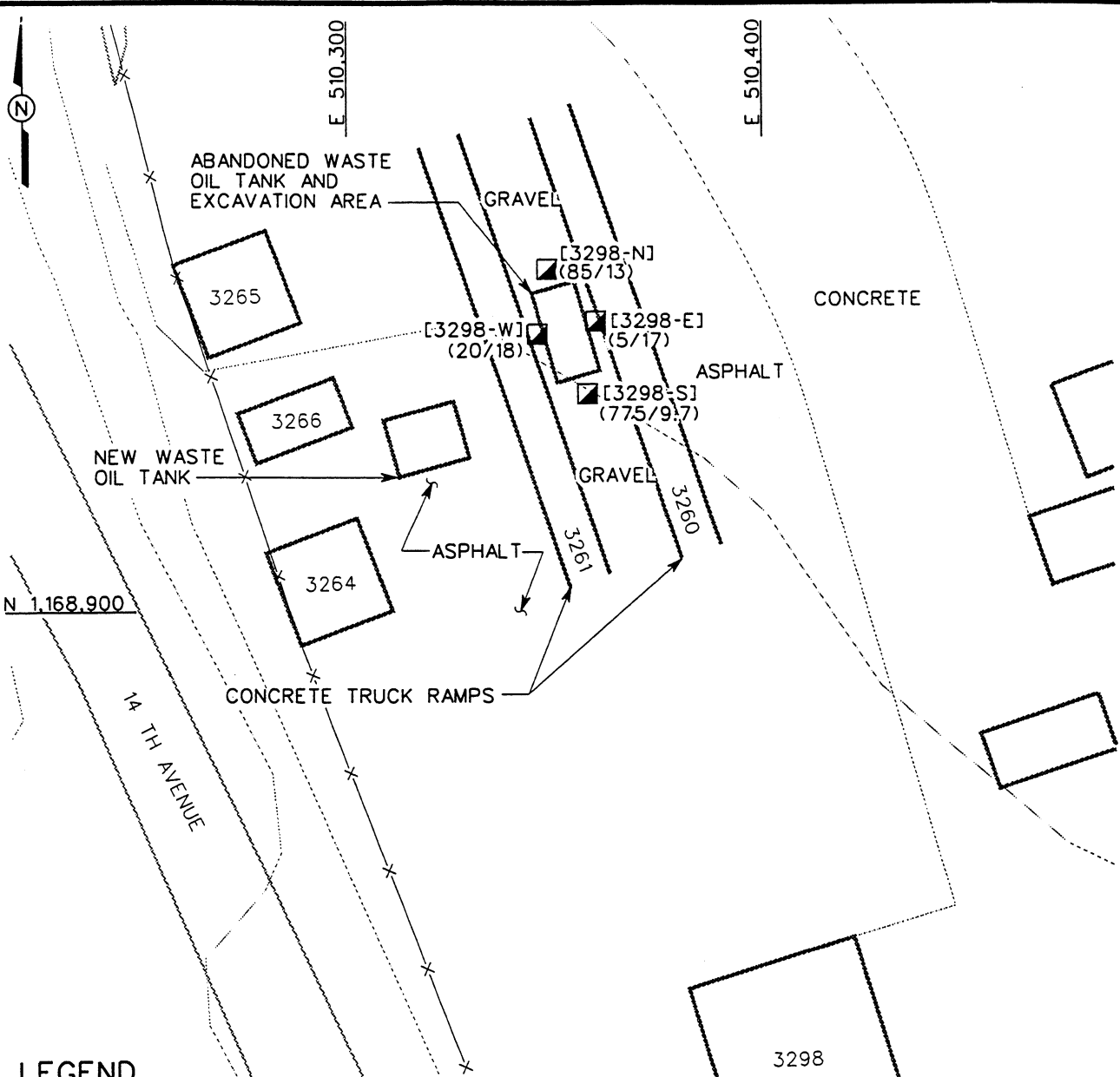
Soil Sample Location ^a	TPH (mg/kg)	Total Lead (mg/kg)	Sample Depth (ft)
3298-N	85	13	7.5
3298-E	5	17	7.5
3298-S	775	9.7	5
3298-S	140	18	7.5
3298-W	20	18	7.5
Stockpile	2,900	26	NA

^aSoil samples collected by Braun Intertec Corporation in April 1994.
mg/kg - Milligrams per kilogram.
TPH - Total petroleum hydrocarbon.

DWG. NO.: ... \774645es.025	INITIATOR: J. TARR	DRAFT. CHCK. BY:	STARTING DATE: 04/29/98
PROJ. NO.: 774645	PROJ. MGR.: J. YACOUB	ENGR. CHCK. BY: A. MAYILA	DRAWN BY: D. BILLINGSLEY
			DATE LAST REV.:
			DRAWN BY:

19 MAY 98
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LEGEND

- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- FENCE
- EXISTING SOIL BORING

[3298-W] SAMPLE LOCATION NUMBER

mg/L MILLIGRAMS PER LITER
(PARTS PER MILLION)

(20 mg/L) [TPH CONCENTRATION IN SOIL (1994)]
(18 mg/L) [LEAD CONCENTRATION IN SOIL (1994)]

NOTE

- ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.
- ALL SOIL SAMPLES COLLECTED AT 7 1/2' BELOW LAND SURFACE (bls) EXCEPT 3298-S. 3298-S WAS COLLECTED AT 5' (bls).

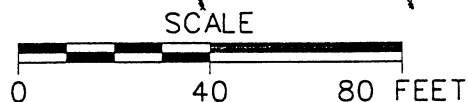


FIGURE 2-4
TOTAL PETROLEUM HYDROCARBONS (TPH) AND LEAD (Pb) CONCENTRATIONS IN SOIL BUILDING 3298 (1994)
11th CHEMICAL MOTOR POOL AREA PARCELS 29(7), 30(7) & 74(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL
TECHNOLOGY
CORPORATION

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objective (DQO) process (EPA, 1993) is followed to evaluate data requirements and to support the decision-making process associated with future action at the 11th Chemical Motor Pool Area. The DQO process as applied to the 11th Chemical Motor Pool Area SI is described in more detail in Section 2.2 of the WP (IT, 1997b). Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and to establish a basis for future action at the site. The intended data users and available data related to the SI at the Motor Pool Area presented in Table 3-1 have been used to formulate a site-specific conceptual model to develop this SFSP. The conceptual model ensures that the objectives of the SI are met and a basis for future action at the site is established. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide defensible information required to confirm or deny the existence and nature of residual chemical contamination in site media.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). All chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the 11th Chemical Motor Pool Area, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

Table 3-1

Summary of Data Quality Objectives
Site Investigation, 11th Chemical Motor Pool Area
Building 3299, Parcel 29(7), Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	Preliminary SI (E&E, 1991) Secondary SI (E&E, 1992) Braun, 1995 Intertec Corporation, 1995 USACE, 1997	<u>Contaminant Source</u> Fuels and fuel components Waste oils, Metals <u>Migration Pathways</u> Infiltration to subsurface soil, infiltration and leaching to groundwater, erosion and runoff to Remount Creek, dust emissions, and volatilization to ambient air. <u>Potential Receptors</u> Groundskeeper FTMC personnel, sportsman, future resident. PSSC Fuels Fuel components Waste oils Organics Metals	Surface Soil	SI to confirm or deny the presence of contamination in the site media and locate source areas, if present. Obtain sufficient data to support, as appropriate, the following: - Implementing an immediate response. - No further action. - Proceeding with an RI/SA.	Surface soil TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B data	4 hand-auger locations + QC
			Subsurface Soil		Subsurface Soil TCL-VOCs TCL-SVOCs TAL-Metals	Definitive + CESAS Level B data	10 direct-push locations + QC
			Groundwater		Groundwater TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B data	10 direct-push locations and 5 monitoring wells + QC
			Surface Water		Surface Water TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B data	3 locations + QC
			Sediment		Sediment TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B data	3 locations + QC
			Depositional Soils		Depositional Soils TCL-VOCs TCL-SVOCs TAL-metals	Definitive + CESAS Level B data	2 locations + QC

ADEM - Alabama Department of Environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah.
DOD - U.S. Department of Defense.
E&E - Ecology & Environment, Inc.
EPA - U.S. Environmental Protection Agency.

PSSC - Potential site-specific chemical.
QC - Quality control.
RI - Remedial investigation.
SA - Site assessment.
SI - Site investigation.

TAL - Target analyte list.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

3.3 Conceptual Site Exposure Model

The following factors were considered in defining the conceptual site exposure model for the 11th Chemical Motor Pool Area:

- Contaminant sources
- Source mediums
- Contaminant transport pathways
- Exposure pathways
- Potential receptors.

Chemicals of potential concern (COPC) at these sites include fuels and fuel components, waste oils, organic chemicals associated with vehicular maintenance, and possibly metals. Primary contaminant release was probably to surface and subsurface soil. Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, erosion and runoff to the surface water and sediment in Remount Creek (located east of the sites), and dust emissions and volatilization to ambient air. The most likely receptors for contaminants present at the 11th Chemical Motor Pool Site are FTMC personnel, the groundskeeper, construction worker, and sportsman. If subsequent investigation reveals that Remount Creek is unlikely to support sport fishing, the sportsman receptor scenario will be downgraded to a youthful visitor who plays in the creek. Future use of these sites may continue as industrial or change to residential (FTMC, 1997). Plausible receptors under the future site use scenario(s) include the groundskeeper, construction worker, sportsman, and resident. The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the 11th Chemical Motor Pool Area. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the 11th Chemical Motor Pool Area will be based on comparing detected site contaminants to site-specific screening levels developed in the WP (IT,

1998b). The data will be reported and evaluated using EPA definitive data with CESAS Level B criteria. Data packages will contain reporting limits sufficient to determine whether the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence or absence of contamination and for supporting a focused feasibility study and risk assessment.

3.4.2 Data Types and Quality

Soil, groundwater, surface water, and sediment will be sampled and analyzed to meet the objectives of the SI at the 11th Chemical Motor Pool Area. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Chapter 9.0 of the QAP.

4.0 Field Activities

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the 11th Chemical Motor Pool Area includes the collection of surface soil, subsurface soil, surface water, sediment, depositional soil, and groundwater samples for chemical analysis.

4.2.1 Surface Soil Sampling

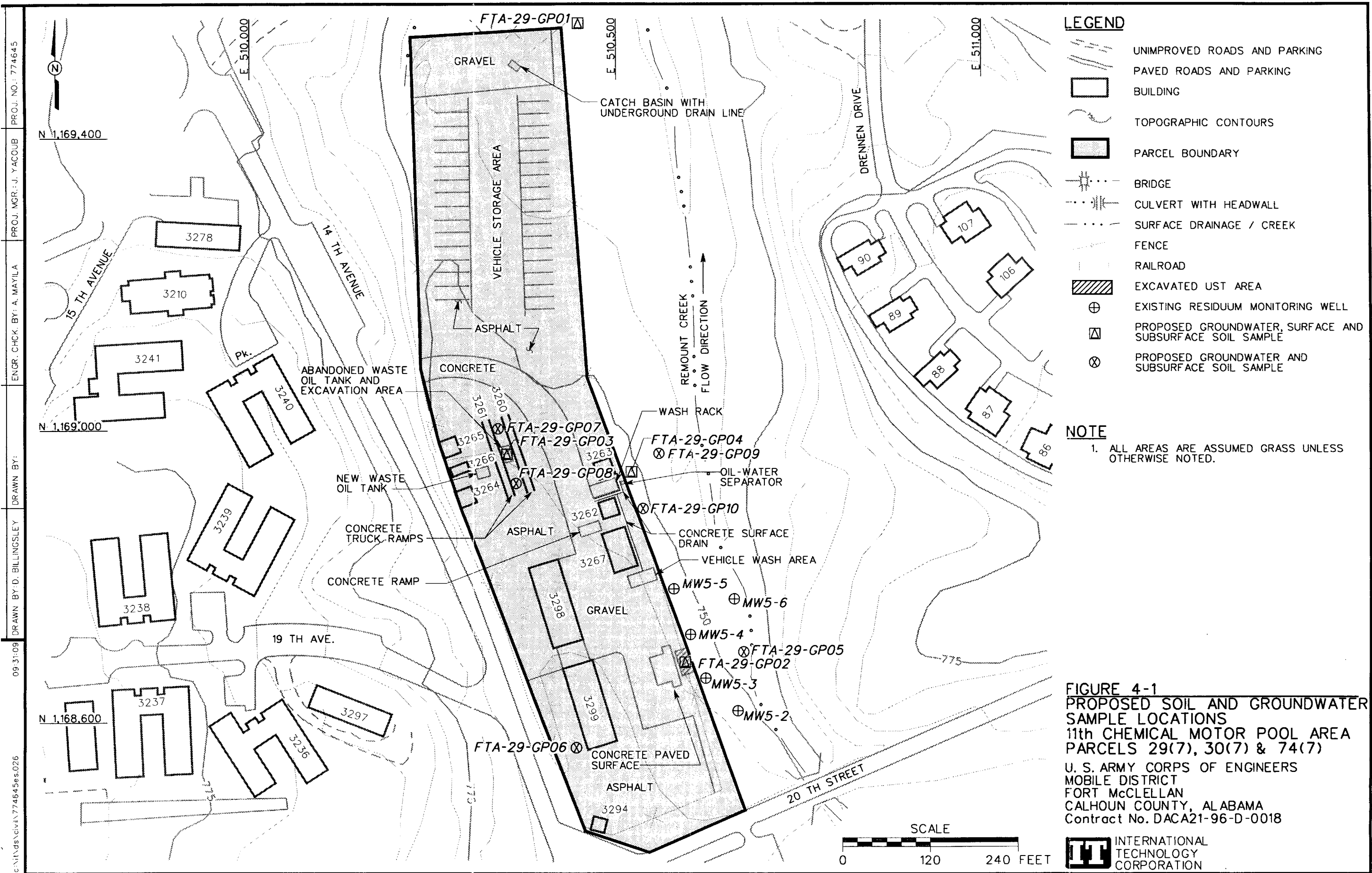
4.2.1.1 Sample Locations and Rationale

The surface soil sampling rationale is presented in Table 4-1. A total of four surface soil samples will be collected from the 11th Chemical Motor Pool Area. Surface soil samples at the 11th Chemical Motor Pool will be collected from the upper 1 foot of soil at each sampling location. The proposed surface soil sampling locations are presented on Figure 4-1.

4.2.1.2 Sample Collection

Surface soil sample designations and their associated QA/QC sample quantities, are listed in Table 4-2. Four surface soil samples will be collected using a hand auger as specified in Section 4.9.1.1 of the SAP.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE
- RAILROAD
- EXCAVATED UST AREA
- EXISTING RESIDUUM MONITORING WELL
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED GROUNDWATER AND SUBSURFACE SOIL SAMPLE

NOTE

- ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

Table 4-1

Site Sampling Rationale
11th Chemical Motor Pool Area, Parcels 29(7), 30(7), and 74(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sampling Location Rationale
FTA-29-GP01	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected near the drain located outside the fenced area in the northeast corner of the site. Drain is connected to a catch basin inside the fence near the vehicle storage area.
FTA-29-GP02	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected to assess the potential surface runoff from the vehicle storage area. Samples will be collected in the center of the removed 10,000-gallon UST excavation area located along the fence near the eastern border of the site. Source area samples will be collected to confirm the presence or absence of petroleum related compounds.
FTA-29-GP03	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected in the approximate vicinity of the abandoned 2,000-gallon waste oil tank excavation area located between the concrete truck ramps 3260 and 3261. Source area samples will be collected to confirm the presence or absence of petroleum related compounds.
FTA-29-GP04	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected in the grass area between the washrack and O/W separator, northeast of Building 3262. Samples collected downgradient of surface drain line for potential overflow/spill or runoff of vehicular fuels into the grass area.
FTA-29-GP05	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Samples will be collected downgradient of the removed 10,000-gallon UST excavation area, next to Remount Creek. The samples will determine if any contaminants have migrated downgradient from the tank excavation.
FTA-29-GP06	SURFACE SOIL GROUNDWATER	Samples will be collected upgradient of Building 3299 and the 10,000-gallon UST excavation area approximately 20 feet west of Building 3299.
FTA-29-GP07	SURFACE SOIL GROUNDWATER	Samples will be collected approximately 50 feet north of FTA-29-GP03, between the concrete truck ramps 3260 and 3261.
FTA-29-GP08	SURFACE SOIL GROUNDWATER	Perimeter sampling point to address the 2,000-gallon UST that was closed in-place and filled with a concrete slurry in 1994. Samples will be collected approximately 50 feet south of FTA-29-GP03 between concrete truck ramps 3260 & 3261.
FTA-29-GP09	SURFACE SOIL GROUNDWATER	Perimeter sampling point to address the 2,000-gallon UST that was closed in-place and filled with a concrete slurry in 1994. Samples will be collected downgradient of the oil-water separator and washrack, approximately 60 feet northeast of Building 3262 in the grass area inside the fence to assess potential migration of chemicals of concern.
FTA-29-GP10	SURFACE SOIL GROUNDWATER	Samples will be collected adjacent to the concrete drain line in the grass area inside the fence between Buildings 3262 and 3267. Sample location represents an area where vehicular fuels could run off and collect and percolate into the substratum.
FTA-29-MW02	GROUNDWATER	A groundwater sample will be collected from perimeter monitoring well MW5-2, located approximately 60 feet cross-gradient of the 10,000-gallon UST tank excavation area.
FTA-29-MW03	GROUNDWATER	A groundwater sample will be collected from monitoring well MW5-3 located in the 10,000-gallon tank excavation area.
FTA-29-MW04	GROUNDWATER	A groundwater sample will be collected from monitoring well MW5-4, located in the northeast corner of the 10,000-gallon tank excavation area.
FTA-29-MW05	GROUNDWATER	A groundwater sample will be collected from monitoring well MW5-5, located north of the 10,000-gallon tank excavation area in the grass.
FTA-29-MW06	GROUNDWATER	A groundwater sample will be collected from downgradient monitoring well MW5-6 next to Remount Creek.
FTA-29-SW/SD01	SURFACE WATER	Sample location is a potential downgradient sink for contaminants from the site.
FTA-29-SW/SD02	SURFACE WATER	Sample location is a potential downgradient sink for contaminants from the site.
FTA-29-SW/SD03	SURFACE WATER	Sample location is a potential downgradient sink for contaminants from the site.
FTA-29-SW/SD01	SEDIMENT	Evidence of contaminant mobility at any point within the site would be integrated at this location.
FTA-29-SW/SD02	SEDIMENT	Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-29-SW/SD03	SEDIMENT	Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-29-DEPO1	DEPOSITIONAL SOIL	Sampling location represents a lower elevation area where surface water runoff could collect, and potentially percolates into the substratum, or potentially deposit dissolved materials after evaporation.
FTA-29-DEPO2	DEPOSITIONAL SOIL	Sampling location represents a lower elevation area where surface water runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.

Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
11th Chemical Motor Pool Area, Parcels 29(7), 30(7), and 74(7)
Fort McClellan, Calhoun County, Alabama

^aFor subsurface soil samples, the sample that exhibits the highest organic vapor reading on an flame ionization detector/photoionization detector will be submitted for laboratory analysis.
Note: Sample depths are approximate for the subsurface soil samples.

TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

4.2.2 Subsurface Soil Sampling

4.2.2.1 Sample Locations and Rationale

Subsurface soil sampling rationale is presented in Table 4-1. A total of ten subsurface soil samples will be collected from the 11th Chemical Motor Pool Area. The proposed subsurface soil sampling locations are presented on Figure 4-1.

4.2.2.2 Sample Collection

Subsurface soil samples will be collected using the direct-push methodology specified in Sections 4.7.1.1 of the SAP.

Subsurface soil samples will be continuously collected from land surface to 12 feet below ground surface or until either refusal or groundwater is encountered. Samples from the entire length of the boring will be field screened using a photoionization detector (PID). Samples will be collected for headspace screening as specified in Section 4.15.3 of the SAP. The soil sample from each boring exhibiting the highest reading on a PID will be sent to the laboratory for chemical analysis. In the event VOCs are not detected during field screening, the subsurface sample collected from the deepest interval in each boring will be submitted to the analytical laboratory. The sample collected from the elevation nearest the bottom of the former UST will be selected for chemical analysis. These sample intervals are proposed and tentative. The final sample intervals will be selected by the on-site geologist. The geologist will base his/her decision on field screening, soil staining, and depth to water. Samples to be collected at the 11th Chemical Motor Pool area and their designated sample numbers, along with required QA/QC sample quantities, are listed in Table 4-2.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.3 Groundwater Sampling

4.2.3.1 Sample Locations and Rationale

Groundwater sampling rationale is presented in Table 4-1. A total of 15 groundwater samples will be collected from the 11th Chemical Motor Pool Area. Ten groundwater samples will be

collected from direct-push locations and five groundwater samples will be collected from existing monitoring wells for chemical analysis. The proposed groundwater sampling locations are presented on Figure 4-1.

4.2.3.2 Direct-Push Groundwater Sampling

Direct-push groundwater samples will be collected from the same locations as the soil samples (Figure 4-1). Sample collection procedures will be performed as outlined in Section 4.7.1.1 of the SAP. Groundwater samples will be collected as outlined in Section 4.19 of the SAP.

Groundwater samples to be collected and the associated QA/QC sample quantities are listed in Table 4-3.

4.2.3.3 Monitoring Well Groundwater Sampling

Groundwater samples will be collected from the existing monitoring wells (MW5-2, MW5-3, MW5-4, MW5-5, and MW5-6) for the parameters listed in Table 4-3. Monitoring well locations are presented on Figure 4-1. Groundwater samples to be collected and the associated QA/QC sample quantities are listed in Table 4-3.

Prior to sampling residuum wells, static water levels will be measured from the available wells at the site to define the groundwater flow direction in the residuum aquifer. Water level measurements will be performed as outlined in Section 4.18 of the SAP.

4.2.4 Surface Water Sampling

4.2.4.1 Sample Locations and Rationale

Surface water sampling rationale is presented in Table 4-1. Three surface water samples will be collected from Remount Creek, located approximately 90 feet east of the 11th Chemical Motor Pool Area. Figure 4-2 shows the proposed surface water sample locations.

4.2.4.2 Sample Collection

Three surface water samples will be collected in areas where surface water runoff is most likely to occur. In the event that Remount Creek is dry, surface water samples will be collected following a rain event. Surface water samples to be collected at the 11th Chemical Motor Pool Area and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses

Table 4-3

Direct-Push and Monitoring Well
Groundwater Sample Designations and QA/QC Sample Quantities
11th Chemical Motor Pool Area, Parcels 29(7), 30(7), and 74(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-29-GP01	FTA-29-GP01-GW-AA3001-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP02	FTA-29-GP02-GW-AA3002-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP03	FTA-29-GP03-GW-AA3003-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP04	FTA-29-GP04-GW-AA3004-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP05	FTA-29-GP05-GW-AA3005-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP06	FTA-29-GP06-GW-AA3006-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP07	FTA-29-GP07-GW-AA3007-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP08	FTA-29-GP08-GW-AA3008-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-GP09	FTA-29-GP09-GW-AA3009-REG	FTA-29-GP09-AA3010-FD	FTA-29-GP09-AA3011-FS		TCL VOCs\SVOCS TAL Metals
FTA-29-GP10	FTA-29-GP10-GW-AA3012-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-MW02	FTA-29-MW02-GW-AA3013-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-MW03	FTA-29-MW03-GW-AA3014-REG	FTA-29-MW03-AA3015-FD	FTA-29-MW03-AA3016-FS	FTA-29-MW03-AA3014-MS FTA-29-MW03-AA3014-MSD	TCL VOCs\SVOCS TAL Metals
FTA-29-MW04	FTA-29-MW04-GW-AA3017-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-MW05	FTA-29-MW05-GW-AA3018-REG				TCL VOCs\SVOCS TAL Metals
FTA-29-MW06	FTA-29-MW06-GW-AA3019-REG				TCL VOCs\SVOCS TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

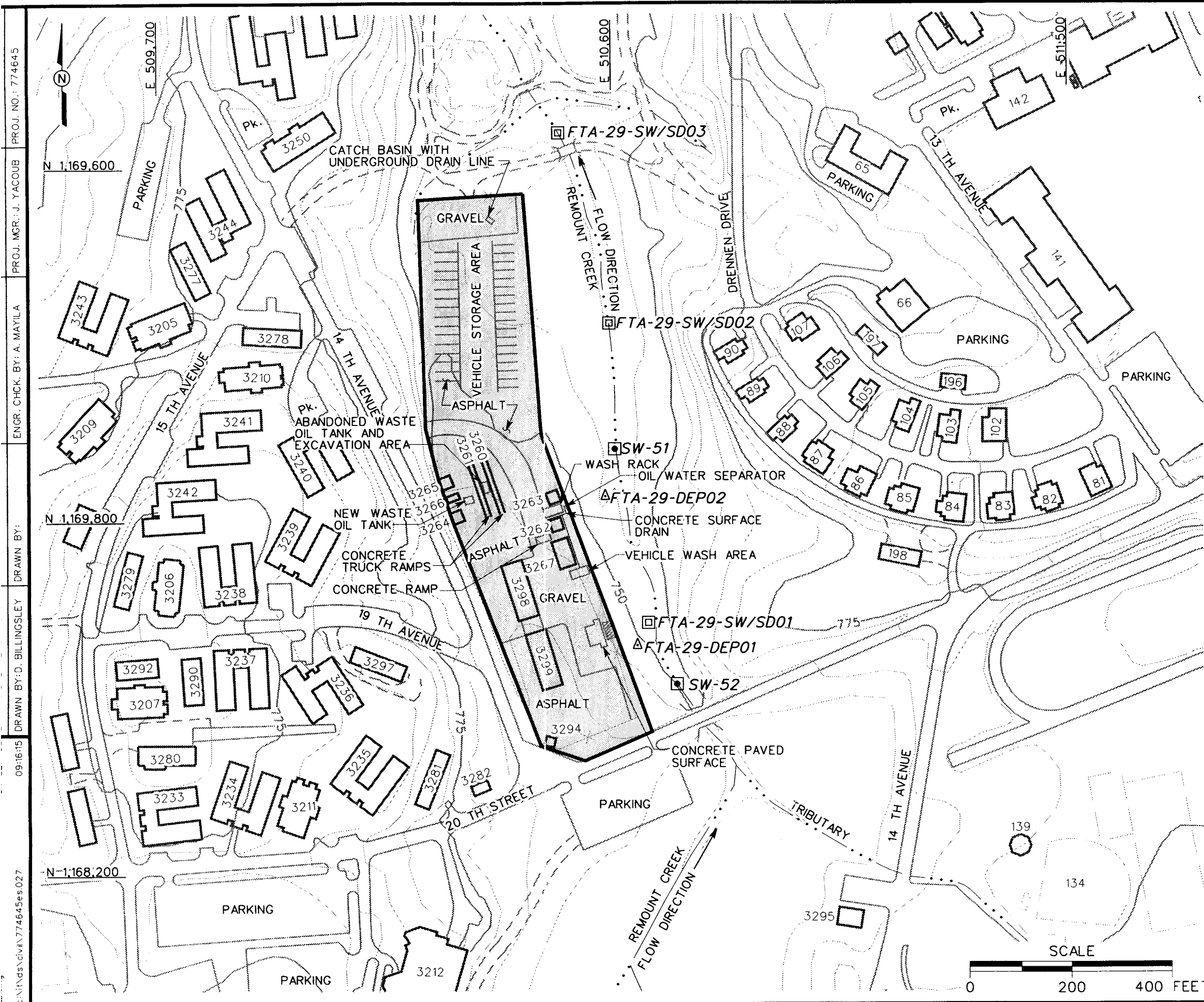
QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.



LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- FENCE
- RAILROAD
- EXCAVATED UST AREA
- EXISTING SURFACE WATER SAMPLE
- PROPOSED SURFACE WATER/SEDIMENT SAMPLE
- PROPOSED DEPOSITIONAL SOIL SAMPLE

NOTE

1. ALL AREAS ARE ASSUMED GRASS UNLESS OTHERWISE NOTED.

FIGURE 4-2
PROPOSED SURFACE WATER AND SEDIMENT SAMPLE LOCATIONS
11th CHEMICAL MOTOR POOL AREA
PARCELS 29(7), 30(7) & 74(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

IT INTERNATIONAL TECHNOLOGY CORPORATION

PROJ. NO.: 774645
PROJ. MGR.: J. YACOB
ENGR. CHK. BY: A. MAYLA
DRAWN BY: D. BILLINGSLEY
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Table 4-4

**Surface Water, Sediment, and Depositional Soil Sample Designations
and QA/QC Sample Quantities
11th Chemical Motor Pool Area, Parcels 29(7), 30(7), and 74(7)
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-29-SW/SD01	FTA-29-SW/SD01-SW-AA2001-REG FTA-29-SW/SD01-SD-AA1001-REG				TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-29-SW/SD02	FTA-29-SW/SD02-SW-AA2002-REG FTA-29-SW/SD02-SD-AA1002-REG				TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-29-SW/SD03	FTA-29-SW/SD03-SW-AA2003-REG FTA-29-SW/SD03-SW-AA1003-REG				TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-29-DEP01	FTA-29-DEP01-DEP-AA1004-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-29-DEP02	FTA-29-DEP02-DEP-AA1005-REG				TCL VOCs, TCL SVOCs, TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TOC - Total organic carbon using EPA Method 9060 (sediments only).

Grain size using ASTM D421/D422 (sediments only).

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.5 Sediment Sampling

4.2.5.1 Sample Location and Rationale

Sediment sampling rationale is presented in Table 4-1. Three sediment samples will be collected from Remount Creek, located approximately 90 feet east of the 11th Chemical Motor Pool Area. Figure 4-2 shows the proposed sediment sample locations.

4.2.5.2 Sample Collection

Sediment samples to be collected at the 11th Chemical Motor Pool Area and their designated sample numbers, along with QA/QC sample quantities, are listed in Table 4-4. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.2.6 Depositional Soil Sampling

4.2.6.1 Sample Location and Rationale

Two depositional soil samples will be collected from Remount Creek. The sampling rationale is listed in Table 4-1 and the proposed sampling location is shown on Figure 4-1. The depositional soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-4. The actual depositional soil sample point will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

4.2.6.2 Sample Collection

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collected specified in Section 4.9.1.1 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for both horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers, preservatives, and coordinate sampling procedures to the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the PSSC present historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the 11th Chemical Motor Pool Area consist of the following list of parameters:

- TCL VOCs – Method 5035/8260B
- TCL SVOCs – Method 8270C
- TAL Metals – Method 6010B/7000
- Total organic carbon – Method 9060 (sediment only)
- Grain size –American Society for Testing and Materials D421/D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). The chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.6 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Attn: Sample Receiving
 Quanterra Environmental Services
 5815 Middlebrook Pike
 Knoxville, Tennessee 37921
 Telephone: (423) 588-6401

Split samples collected for the USACE laboratory will be shipped to the following address:

Attn: Sample Receiving
 USACE South Atlantic Division Laboratory
 611 South Cobb Drive
 Marietta, Georgia 30060
 Telephone: (770) 919-5270.

Table 4-5

Analytical Samples, 11th Chemical Motor Pool Area
Building 3299, Parcel 29(7), Building 3298, Parcel 30(7), and Building 3262, Parcel 74(7)
Site Investigation
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples ^a					Quanterra	
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Splits w/ QA Lab (10%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis
11th Chem Motor Pool - Parcels 29(7), 30(7), and 74(7): 18 water matrix samples (10 direct-push groundwater samples, 5 existing monitoring well samples, and 3 surface water samples); 19 soil matrix samples (4 surface soil samples, 10 subsurface soil samples, 3 sediment samples, and 2 depositional soil samples).													
TCL VOCs	8260B	water	normal	18	1	18	2	2	1	4	1	23	1
TCL SVOCs	8270C	water	normal	18	1	18	2	2	1	1	1	19	1
TAL Metals	6010B/7000	water	normal	18	1	18	2	2	1	1	1	19	1
TCL VOCs	8260B	soil	normal	19	1	19	2	2	1	1	1	19	1
TCL SVOCs	8270C	soil	normal	19	1	19	2	2	1	1	1	19	1
TAL Metals	6010B/7000	soil	normal	19	1	19	2	2	1	1	1	19	1
TOC	9060	sediment	normal	3	1	3	0	0	0	0	0	3	0
Grain Size	ASTM D421/D422	sediment	normal	3	1	3	0	0	0	0	0	3	0
11th Chem Motor Pool Subtotal:				117		12	12	12	6	4	6	124	6

^aField duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number.

Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-584-4315

USACE Laboratory split samples
are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060
Tel: 707-919-5270

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

4.7 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the 11th Chemical Motor Pool Area will include decontamination fluids, purge water from direct-push temporary monitoring wells, and disposable personal protective equipment. The IDW will be staged in drums located within the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the BCT on a monthly basis.

6.0 References

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Ecology & Environment, Inc. (E&E), 1992, *Secondary Investigation Report for Closure of Surplus Underground Storage Tanks, Fort McClellan, Anniston, Alabama*, Prepared for the U.S. Army Corp of Engineers, Mobile District, September.

Ecology & Environment, Inc. (E&E), 1991, *Preliminary Investigation Report for Closure of Underground Storage Tanks, Fort McClellan, Anniston, Alabama*, Prepared for the U.S. Army Corp of Engineers, Mobile District, March.

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Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan, Fort McClellan Reuse and Redevelopment Authority of Alabama, Implementation Strategy*, November.

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U.S. Army Corps of Engineers (USACE), 1998, *Site Investigations, Fort McClellan, Alabama, Scope of Work*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.